



# Human Reproduction

Probe 9 textbook  
Chapter 4

# General Vocabulary

## Gametes:

- Sperm in males
- Egg in females

## Primary sexual characteristics:

- Structures that produce gametes (e.g. ovary, testes)
- Structures that enable gametes to meet (e.g. penis, vagina, vas deferens, etc.)

# General Vocabulary

## Secondary sexual characteristics:

- Not necessary for sexual reproduction
- Help outwardly distinguish males from females
- Develop alongside primary characteristics during puberty
  - **Puberty**: developmental period where human becomes sexually mature and able to reproduce (usually begins age 11-13; continues until age 18)

Males	Females
<ul style="list-style-type: none"><li>• Growth spurt</li><li>• Facial, underarm, pubic hair</li><li>• Deepening voice</li></ul>	<ul style="list-style-type: none"><li>• Growth spurt</li><li>• Breasts (mammary glands)</li><li>• Underarm and pubic hair</li><li>• Widening of hips</li></ul>

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# BOY



# GIRL

11 to 13 years old & approximately until 15 or 16.

9-13 Years Old

- testosterone and other hormones cause physical changes.
- The sexual organs start growing and preparing for reproduction.
- increase in height and weight.
- Hair grows in the pubic area, the underarms, the face, and the legs.
- The vocal chords change, so the voice grows deeper.
- Some develop acne.
- The reproductive system starts working & they can procreate.



- Hair growth in underarms & the pubis
- Breast development
- Ovaries grow larger and start producing hormones.
- Menstrual cycles start
- Hips widen
- Height and weight increase due to changes in the body's structure
- Sweat glands become more active.
- Problems with acne may arise.
- Mood swings become more frequent due to hormone production.

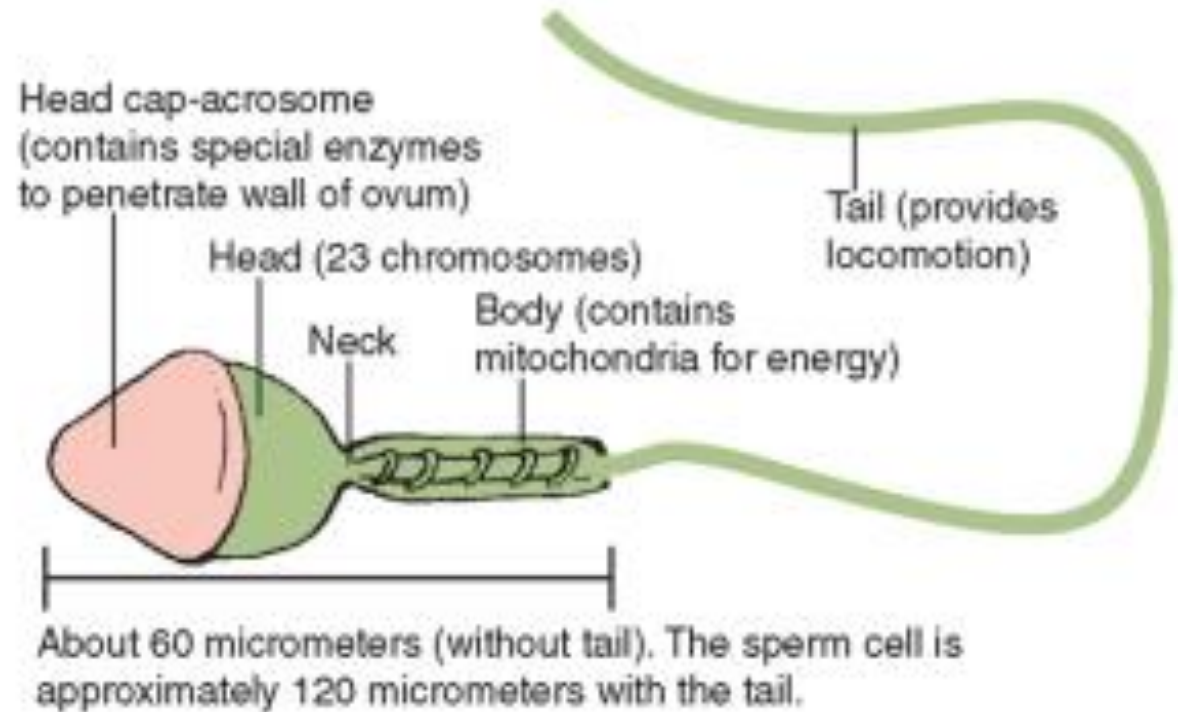
**Is there a big  
difference  
between male  
and female  
anatomy?**



**Yes, a vas  
deferens.**

# Sperm Structure

- Very small: 120  $\mu\text{m}$
- Specialized for swimming
  - Flagellum is a whip-like tail that allows sperm to swim
- Each sperm has 50-75 mitochondria; swimming takes a lot of energy!

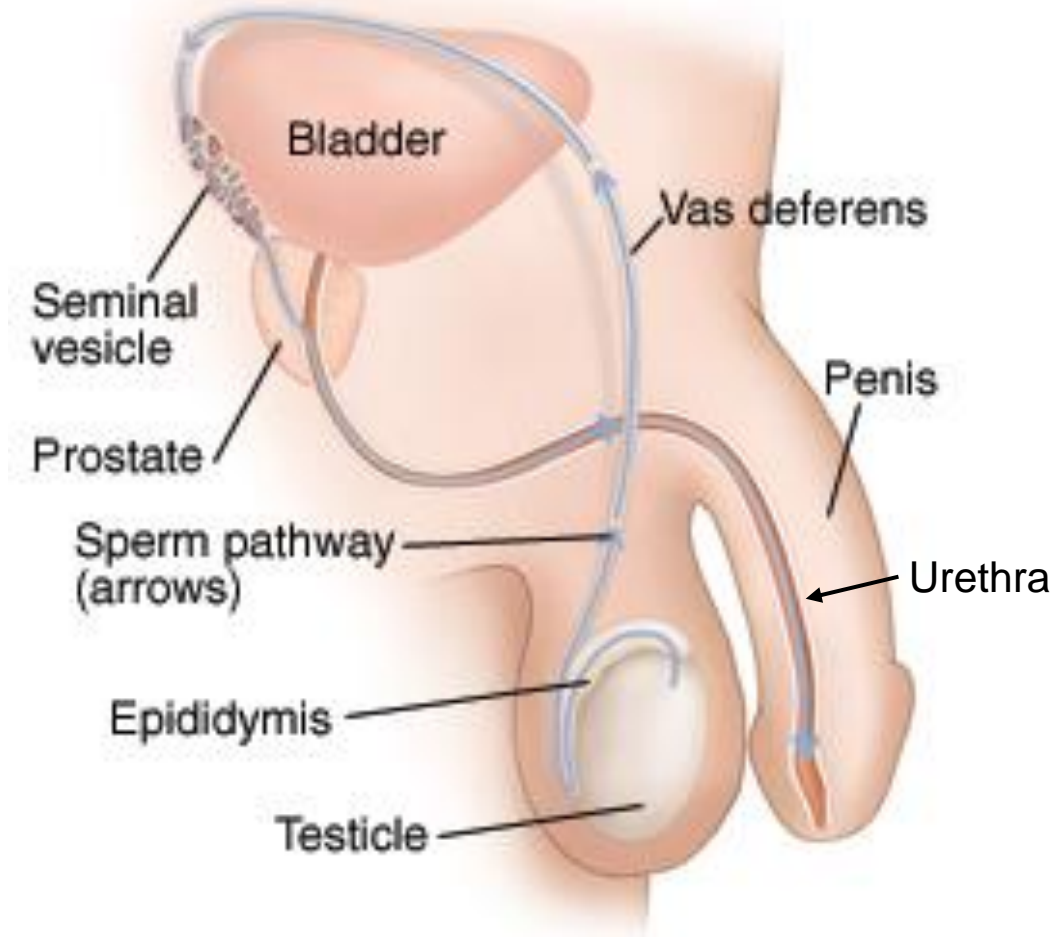


# Male Primary Reproductive Structures

**Testicle** (aka testis or pl. testes): produces and nourishes developing sperm

**Epididymis**: where mature sperm are stored

**Vas deferens**: tube that carries sperm to urethra





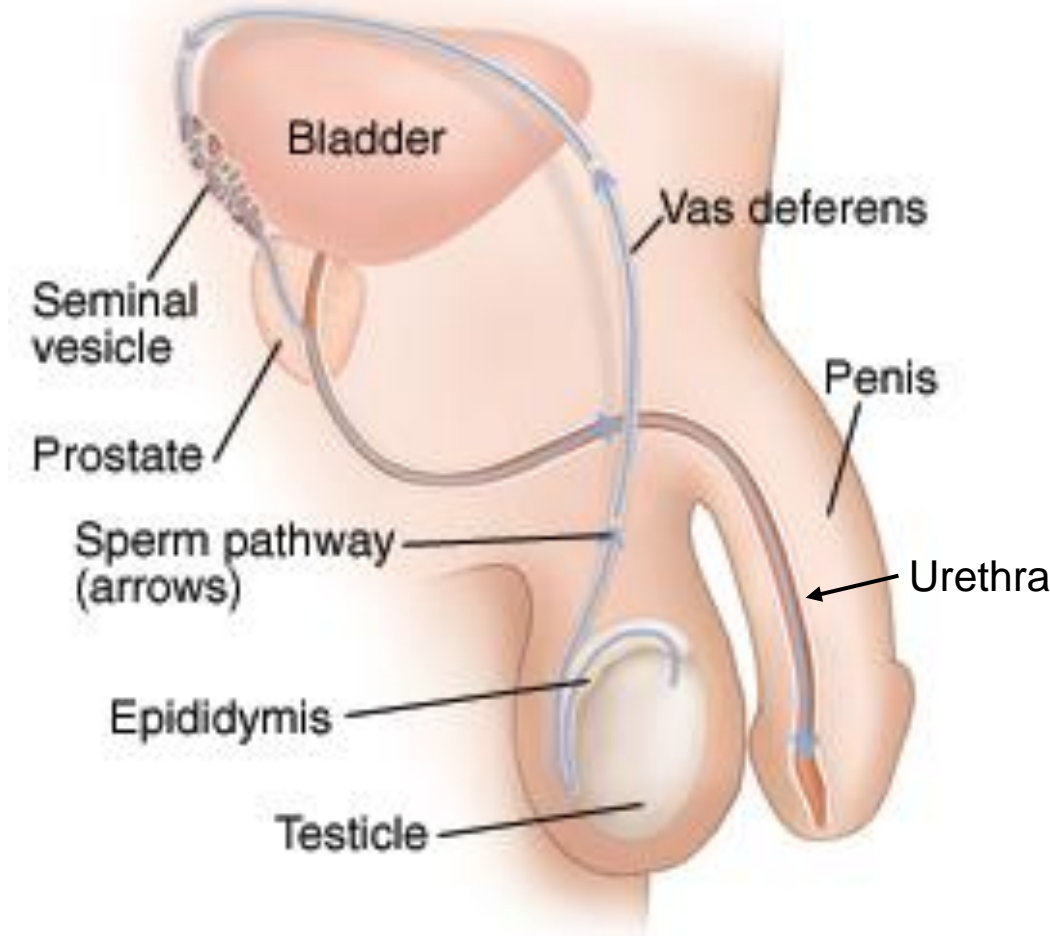
# Male Primary Reproductive Structures

**Seminal vesicle:** secretes seminal fluid

- **Seminal fluid:** Provides sugar for energy, protects the sperm, provides fluid for sperm to swim

**Urethra:** transports sperm (and urine) outside the body

**Penis:** organ that contains the urethra; enters the female during sexual intercourse

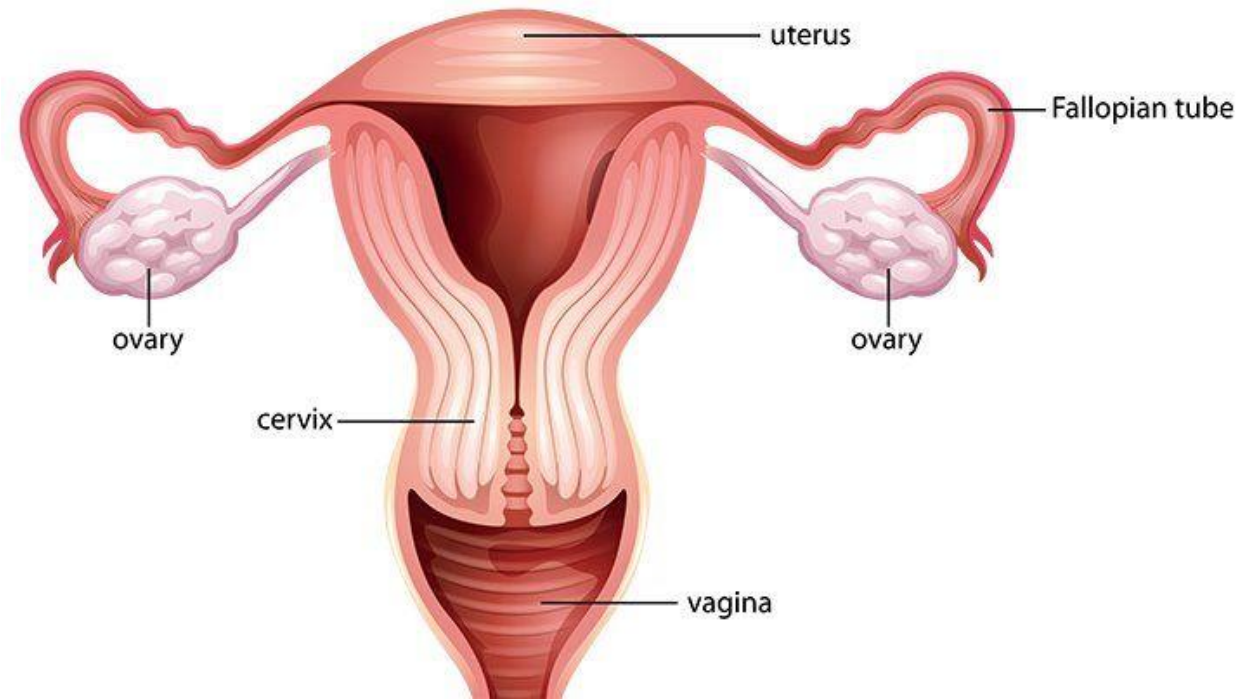


# Female Primary Reproductive Structures

## *Ovary:*

- site of egg maturation and release
- produces ***estrogen*** and ***progesterone*** (female sex hormones)

***Oviduct (Fallopian Tube):*** Tube that transports the egg to the uterus



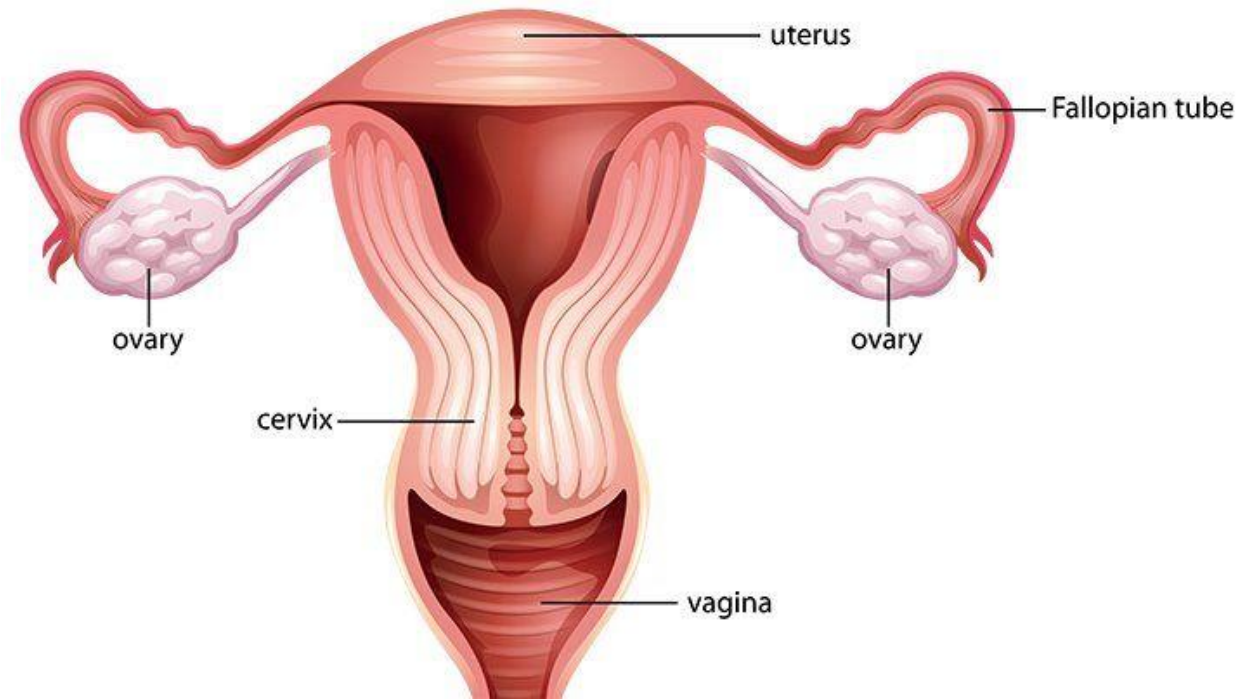
# Female Primary Reproductive Structures

**Uterus (womb):** Organ that will receive the embryo if the egg is fertilized

**Endometrium:** lining of the uterus, which is shed during menstruation

**Vagina:**

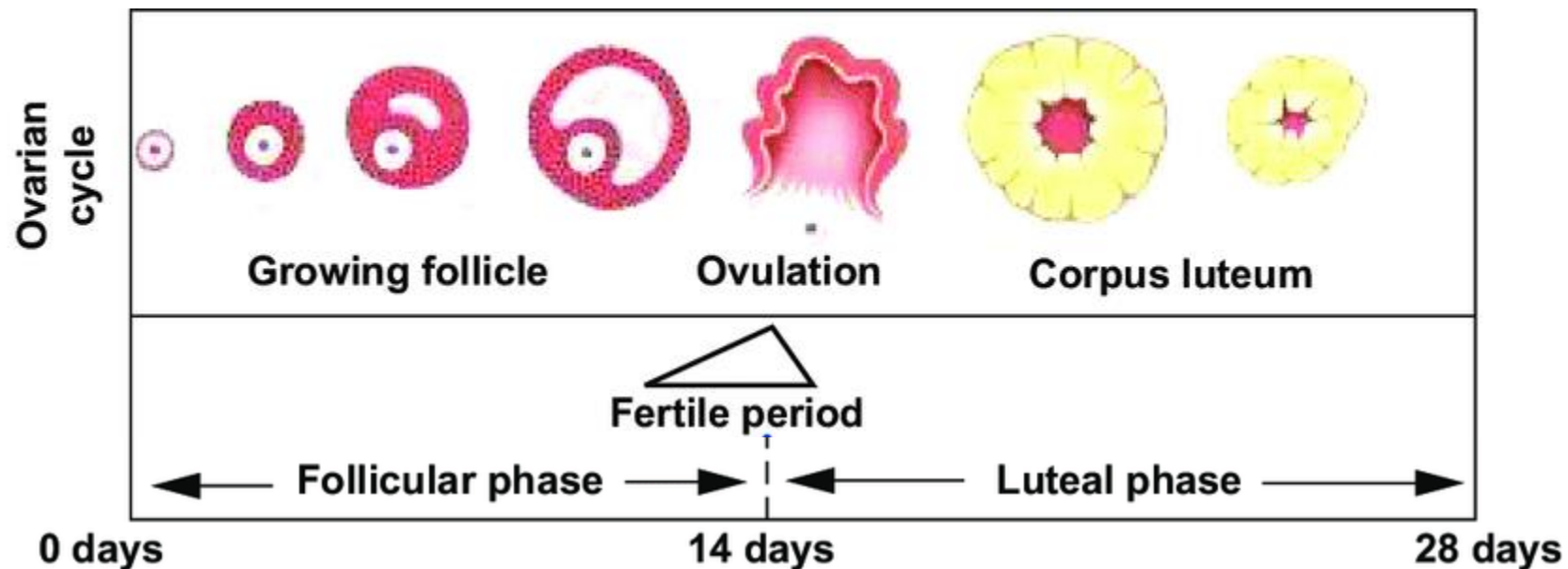
- Receives the male penis and sperm during sexual intercourse
- Is the birth canal for the baby



# Egg Development

**Follicle:** contains single immature egg; many follicles are located in ovary

**Corpus luteum:** empty follicle that remains after ovulation; produces estrogen and progesterone



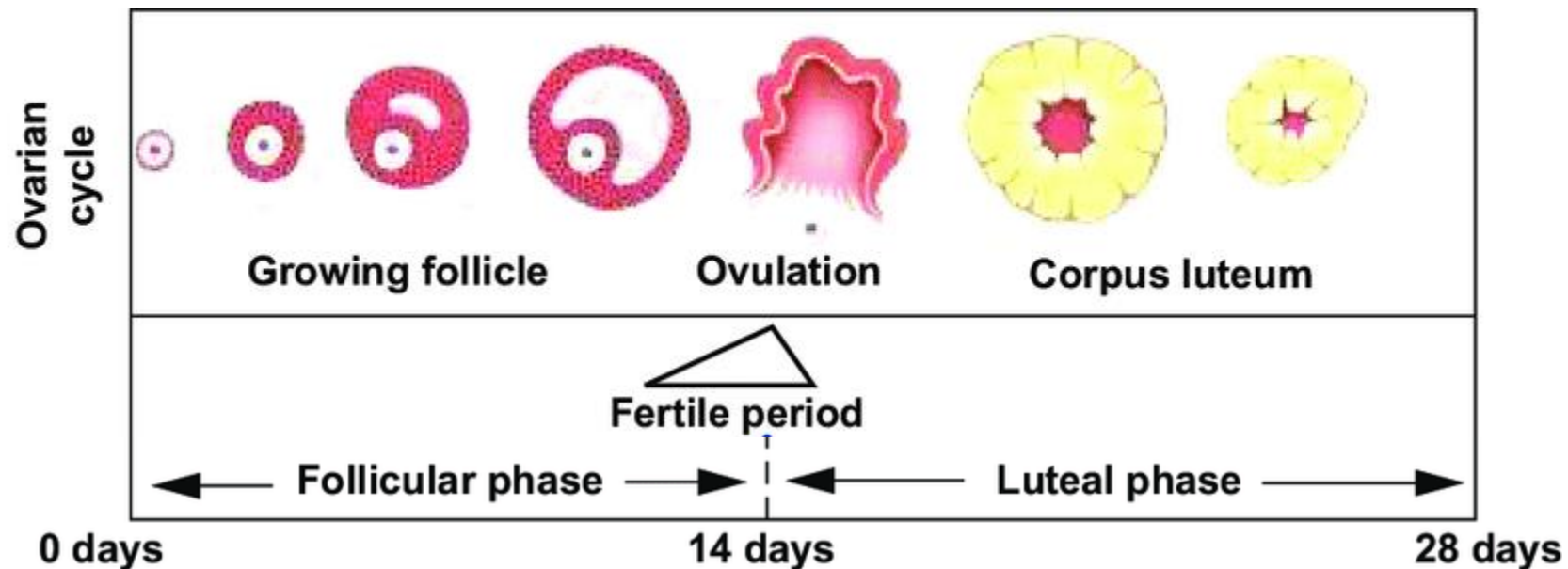
# Menstrual Cycle

**Flow phase: menstruation** (shedding of the endometrium) occurs (“0 days”)

**Follicular phase:** new follicle begins to develop

**Ovulation:** egg is released from ovary and travels towards uterus

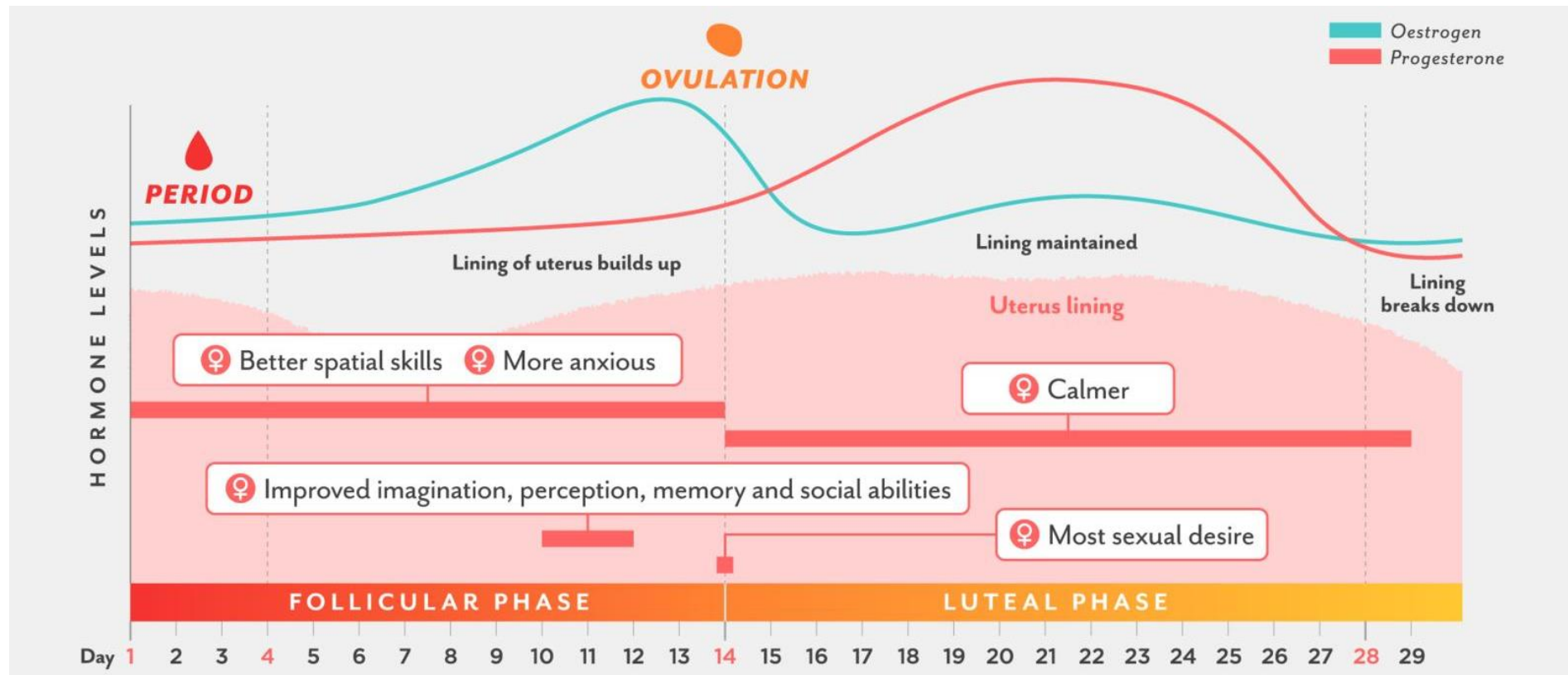
**Luteal phase:** corpus luteum develops



# A Tale of Two Hormones

**Progesterone:** female sex hormone; stimulates endometrium thickening; stops the development of any other eggs

**Estrogen:** female sex hormone



# Hormonal Birth Control

Many hormonal methods of birth control (e.g. “The Pill”) increase progesterone levels. How does this prevent pregnancy?

During pregnancy, high levels of progesterone and estrogen prevent other eggs from maturing. The Pill functions by mimicking pregnancy hormone levels. If eggs don't develop, then pregnancy cannot occur!



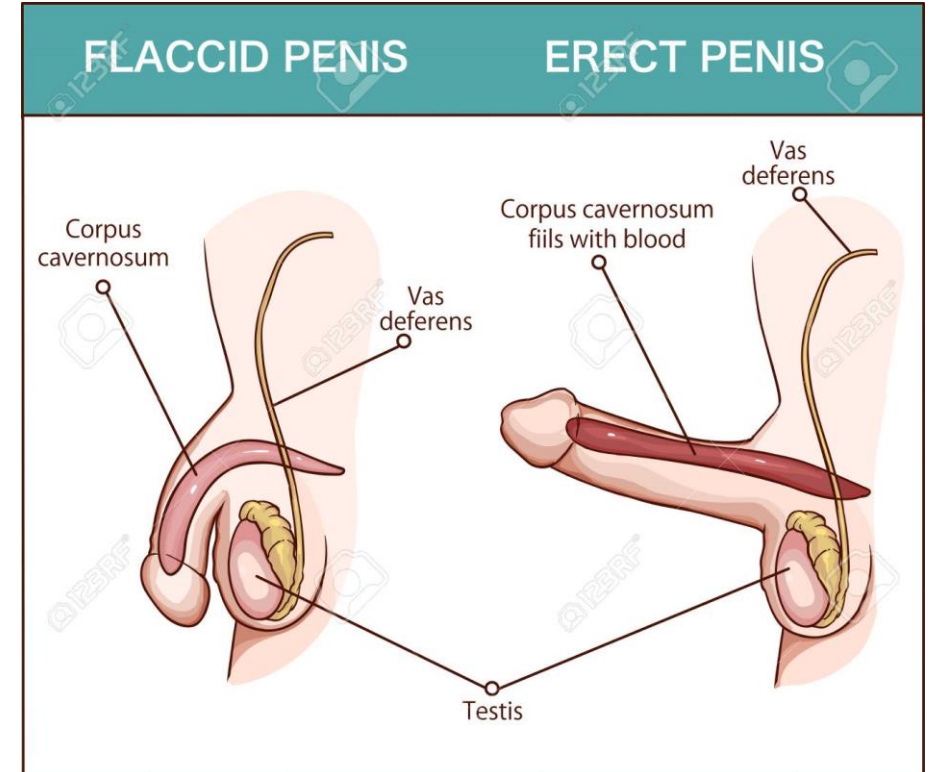
# Sexual Intercourse

Sexual arousal increases blood flow to the genital area. Result:

- Male penis becomes erect.
- Female vagina produces natural lubrication.

## ***Ejaculation:***

- Discharge of ***semen*** (containing seminal fluid and sperm) from the penis.





# Fertilization and Pregnancy

- Fertilization occurs when a sperm cell meets an egg. There, it releases chemicals that prevent other sperm cells from fertilizing the same egg.
- Fertilization usually occurs within the oviduct.
- The fertilized egg then implants in the uterus to develop. The individual is now pregnant.

# Fertilization and Pregnancy

Random facts:

- Twins occur when one fertilized egg splits *or* two eggs are released and fertilized.
- 2% of the time, the fertilized egg implants in the wrong place and cannot develop properly (ectopic pregnancy). If not terminated, the mother's health is at risk.

# Birth Control

**Birth Control** refers to a number of methods intended to prevent or reduce the chances of pregnancy.

Discuss: Given what you know about the reproductive system, sexual intercourse and pregnancy, brainstorm some ways to prevent pregnancy.

We will discuss the most common forms of birth control; however, if you are planning on becoming sexually active, you should consult a physician to determine which method is best for you.

# Legend

- Highly effective
- Mostly effective
- Unreliable, not effective on its own
- Permanent, surgery

**abstinence**

don't have sex

## male condom

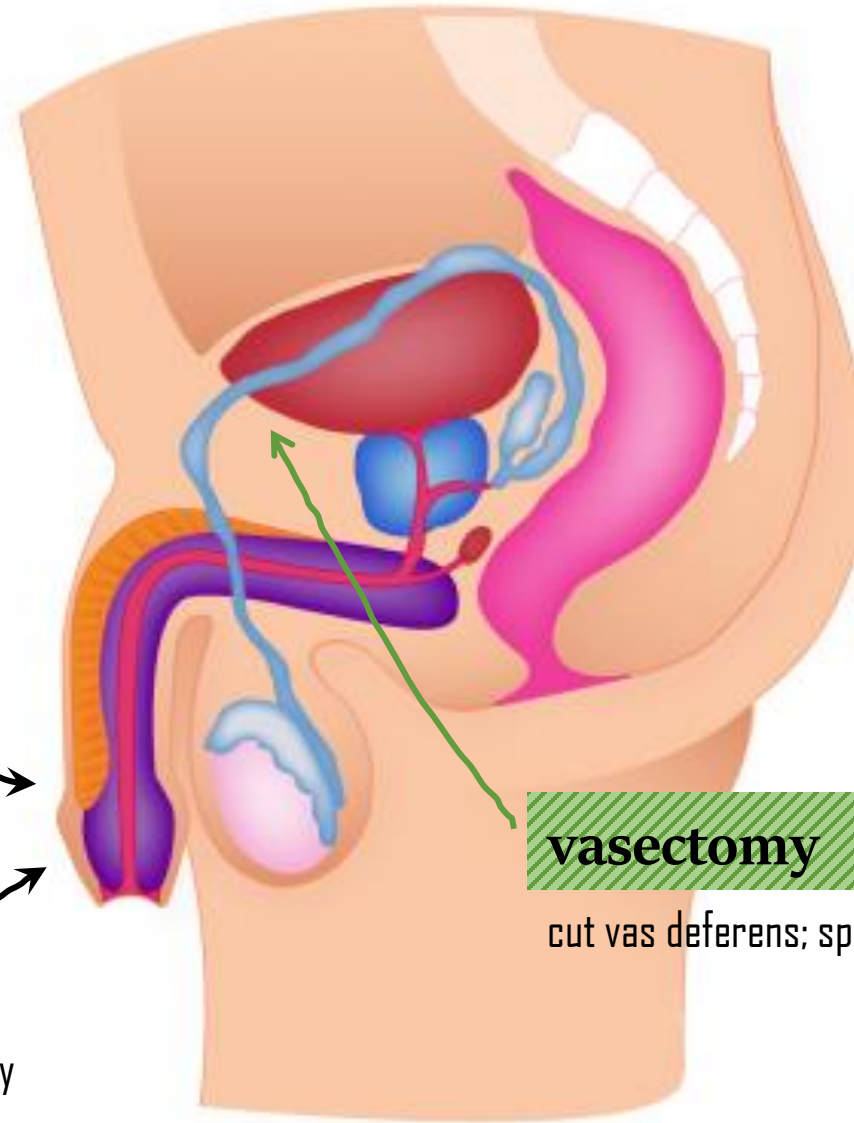
'contains' ejaculate; prevents sperm from entering female  
(issues: condom may burst or leak)

## pulling out

remove penis from vagina before ejaculation  
(issues: precum can contain sperm; penis may not be removed quickly enough)

## vasectomy

cut vas deferens; sperm cannot enter penis



# Legend

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## tubal ligation

cut oviduct; egg does not enter uterus

## oophorectomy/ hysterectomy

remove ovary/uterus

## female condom

'contains' ejaculate; prevents sperm from entering female  
(issues: condom may burst or leak; difficult to use)

## copper IUD

prevent implantation  
(issues: risk of perforation and dislodgment)

## abstinence

don't have sex

## cycle tracking

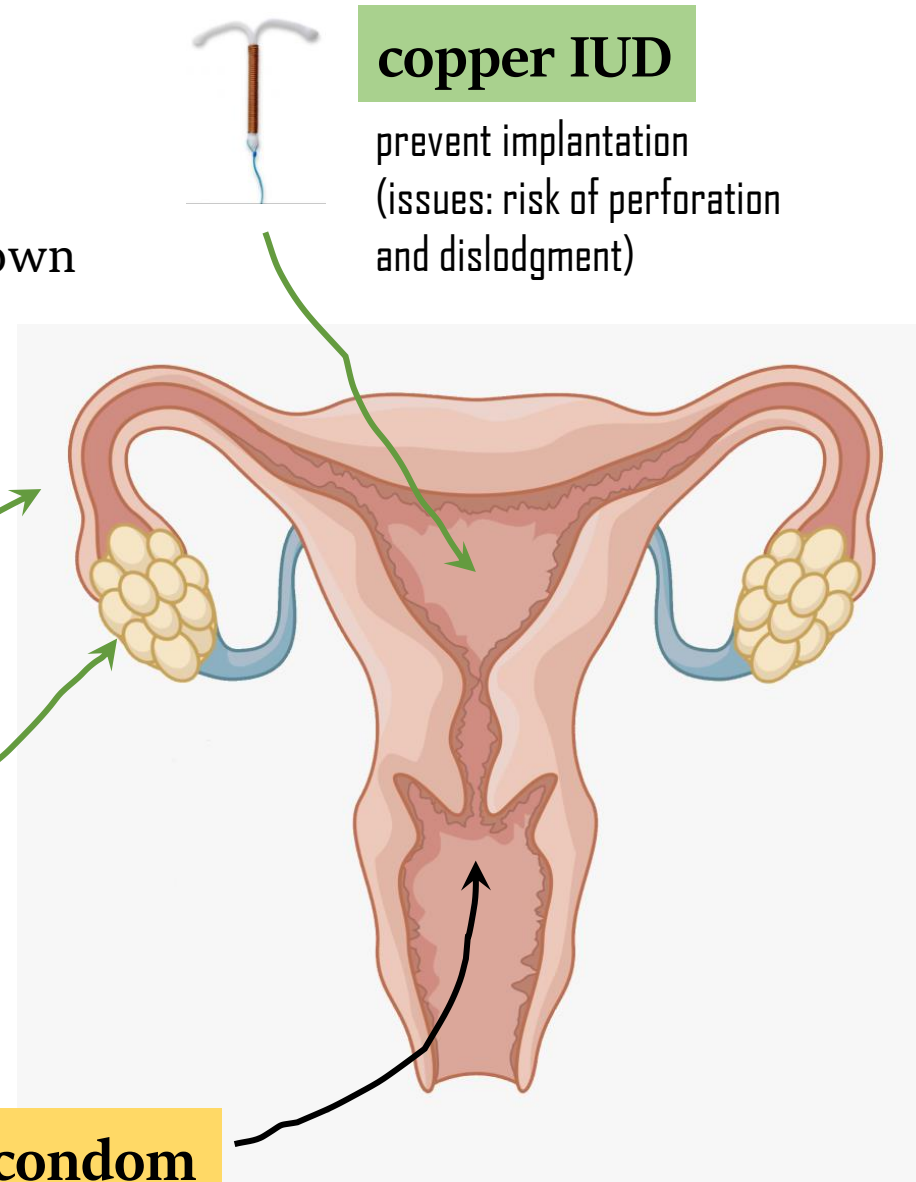
avoid sex during fertile periods  
(issues: every woman is different; cycles can vary)

## plan B

prevent ovulation, prevent implantation  
(issue: not reliable; cost per use)

## hormones (Mirena IUD, ring, patch, shot, pill)

prevent ovulation; prevent implantation  
(issues: side effects; consistency)



# Birth Control Summary

**Barrier methods** (condom, etc.): prevent male and female reproductive organs from coming into physical contact with each other

**Copper IUD** (intra-uterine device): inserted into uterus, makes uterus inhospitable (copper); lasts 3-5 years and is low-maintenance

**Hormones**: many methods that vary in ease of use, cost, and effectiveness

**Surgery**: cut or remove organs to make pregnancy impossible

**Behavioural** (pulling out, abstinence, cycle tracking)

# Understanding Consent



# Understanding Consent





# Resources

Richmond Youth Medical Clinic:

<https://youthinbc.com/2009/02/03/richmond-youth-clinic/>

(Note: info may be slightly outdated)

- Free, confidential services for youth (13-21)
  - ✓ Counselling (sexual health, depression, anxiety, family/school issues)
  - ✓ Free birth control
  - ✓ Free emergency contraception
  - ✓ STI testing and treatment
  - ✓ Pregnancy tests

Q&A